

SAIC0078
Serial No. 10'614,188

2

PATENT

REMARKS

Claims 1-38 are pending in this application. Claims 1-35 are rejected. Claims 35-38 are withdrawn from consideration as being drawn to a non-elected invention. Claims 1-3, 6-14, 17-28 and 30-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Number 5,864,641 to Murphy et al ("Murphy") in view of U.S. Patent Number 6,239,876 to Brandenberg ("Brandenberg") and U.S. Patent Number 5,377,008 to Ridgway et al ("Ridgway") (collectively, Murphy, Brandenberg, and Ridgway are "the cited references"). Claims 4-5, 15-16 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Number 5,864,641 to Murphy et al ("Murphy") in view of U.S. Patent Number 6,239,876 to Brandenberg ("Brandenberg") and U.S. Patent Number 5,377,008 to Ridgway et al ("Ridgway"), and further in view of "acknowledged prior art on page 23, paragraph [0083]." In view of the remarks presented herein, the undersigned respectfully traverses these rejections as set forth below.

Rejection of Claims 1-3, 6-14, 17-28 and 30-34 Under 35 U.S.C. §103(a)

Claims 1-3, 6-14, 17-28 and 30-34 are rejected under 35 U.S.C. §103(a) as being unpatentable over Murphy in view of Brandenberg and Ridgway.

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) MPEP §2142.

<US2000> 9196301.1

SAIC0078
Serial No. 10'614,188

3

PATENT

The Office Action has failed to meet the burden of establishing a *prima facie* case for obviousness. The combination of the references does not teach each and every element of the claimed invention.

Independent claim 1 provides:

A method of determining the presence of a target agent in an environment, comprising the steps of:

- obtaining a first sample from the environment;
- introducing the first sample to at least one detection module;
- filtering the first sample through at least a first filter and a second filter comprising the at least one detection module, wherein the first filter contains at least one detection molecule for the target agent and the second filter contains no detection molecules for the target agent;
- measuring an optical property of the first filter and the second filter after filtering the first sample there through; and
- comparing the measured optical property of the first filter to the measured optical property of the second filter to determine the presence of the target agent.

Inter alia, the cited references fail to disclose a first *and* second filter wherein the first sample is filtered through at least a first filter and a second filter. The Office Action states:

Murphy et al shows a sensor for determining the presence of a target agent comprising “detection module” which comprises a grating on a waveguide with an active material that reacts with the agent of interest and causes a change in an optical parameter of the material which can be measured by changes in the manner in which light interacts with the grating. A fluid sample which may contain the agent of interest is passed to the active material; thus it appears that the active material constitutes a filter that filters the sample in the sense the term “filter” is used in the claim. (emphasis added)

While the Office Action asserts that the “active material” taught in the Murphy patent is analogous to the “filter” claimed in the present application, this argument is not persuasive. For example, one embodiment of the Murphy patent discloses the changes that occur when

<US2000> 9196301.1

SAIC0078

4

PATENT

Serial No. 10614,188

the exposed active sites contact a specific target agent (see Murphy c. 6, ll. 66-67 and c. 7, ll. 1-11). While the detection of the target agent initiates a sequence of events ultimately resulting in a "shift in the position of the resonance absorption band," this can not be interpreted to disclose the filtration process described in the present application. The use of the fluid detection sensors described in the Murphy reference may be capable of detecting the presence of an "agent of interest" similarly to the sensors of the present application, but the ability to "trap" a specific target agent offered by the filter function of the present application is not embodied in the Murphy reference.

Further, since neither the Brandenberg or Ridgway patents teach or disclose the use of the "at least a first and a second filter" in the manner claimed in the present application, even when read in conjunction with the Murphy patent, the combination of the references fails to teach or suggest the claimed invention. Accordingly, the undersigned submits that independent claim 1 is allowable as well as all claims that depend from independent claim 1.

Similarly, the combination of the cited references fail to teach each and every element of independent claim 10. Claim 10 states:

A sensor for determining the presence of at least one target agent in a sample comprising:

- 1. a collector system for collecting the sample from an environment;
- 2. a transfer system for adding the sample to working fluid;
- 3. a dispenser system for introducing the working fluid, including the sample, to a detector system; and
- 4. a detector system comprising at least one detector module that includes:
 - at least a first optical grating and a second optical grating, wherein the first optical grating contains at least one detector molecule for detecting the at least one target agent and the second optical grating does not contain a detector molecule for detecting the at least one target agent,
 - at least a first measuring device for measuring an optical response of the first optical grating after contact with the working fluid, including the sample,

<US2000> 9196301.1

SAIC0078
Serial No. 10'614,188

5

PATENT

at least a second measuring device for measuring an optical response of the second optical grating after contact with the working fluid, including the sample, and

a processor for comparing the measured optical response from the at least a first measuring device to the measured optical response from the at least a second measuring device to determine the presence of the at least one target agent.

The cited references fail to teach the use of multiple measuring devices, specifically the "at least a first measuring device" and "the at least second measuring device" as claimed in the present application. For example, while Fig. 1 of the Brandenburg patent illustrates the use of *a* measuring channel, it does not teach or suggest the use of multiple measuring devices as claimed in the present application. Further, reading Brandenburg in light of the other cited references does not render the use of multiple measuring devices as claimed in the present invention obvious.

Since the Office Action has failed to show that each and every element of the independent claim 10 is taught by the combination of the cited references, the rejection under 103(a) is not proper. Therefore, the undersigned respectfully submits that independent claim 10 is allowable as well as all claims which depend therefrom.

Similarly, regarding independent claim 20, the Office has failed to meet the burden to support a showing of obviousness as the Office has failed to show that each and every element of claim 20 is taught by the combination of the cited references. Independent claim 20 states:

A detector module for detecting a target agent within a sample, the detector module comprising:

- ii first and second inlet reservoir for receiving the sample therein;
- ii first micro-fluidic channel integrally connected to the first inlet reservoir;
- ii second micro-fluidic channel integrally connected to the second inlet reservoir;

<US2000> 9196301.1

SAIC0078
Serial No. 10/614,188

6

PATENT

a first optical grating physically integrated with the first micro-fluidic channel and a second optical grating physically integrated with the second micro-fluidic channel, wherein the first optical grating includes at least one detector molecule for detecting the target agent within the sample and the second optical grating does not include a detector molecule for detecting the target agent within the sample; and

at least one outlet reservoir physically integrated with the first and second micro-fluidic channels for removing the sample from the detector module.

Again, the Office Action has failed to show that each and every claimed element is taught in the combination of the cited references. For example, while the Office Action asserts that:

Providing any suitable arrangement for providing the sample fluid to the active material, including micro-fluidic systems, would have been obvious; micro-fluidic systems would have been obvious because this would minimize the amount of the sample fluid needed for the detection.

The Office Action merely asserts that the use of "micro-fluidic systems would have been obvious" without additional support from the cited references. In fact, the cited references do not individually or in combination teach or disclose the use of a "micro-fluidic" system as claimed in the present application. Therefore, the Office Action has failed to meet the burden required to support an obviousness rejection. Accordingly, independent claim 20 is allowable as well as all claims that depend therefrom.

Since the cited references in this Office Action fail to teach each and every element of the claimed invention, the Office has failed to make a case for obviousness under 35. U.S.C. §103(a). Since independent claims 1, 10, and 20 are allowable, the rejection of claims 1-3, 6-14, 17-28 and 30-34 in this Office Action should be withdrawn and reconsidered.

<US2000> 9196301.1

SAIC0078
Serial No. 10/614,188

7

PATENT

Rejection of Claims 4-5, 15-16 and 29 Under 35 U.S.C. §103(a)

Claim 4-5, 15-16 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Number 5,864,641 to Murphy et al ("Murphy") in view of U.S. Patent Number 6,231,876 to Brandenberg ("Brandenberg") and U.S. Patent Number 5,377,008 to Ridgway et al ("Ridgway"), and further in view of "acknowledged prior art on page 23, paragraph [0033]." Since claims 4-5, 15-16 and 29 are dependent on independent claims 1, 10, and 20 and the Office has failed to meet the burden to support a showing of obviousness of independent claims 1, 10, and 20 the Office similarly fails to meet the burden of with respect to claim 4-5, 15-16 and 29. Therefore, given that the Office fails to meet the requisite burden for obviousness, it is respectfully requested that the rejection of claims 4-5, 15-16 and 29 under 35 U.S.C. §103(a) be reconsidered and withdrawn.

<US2000> 9196301.1

SAIC0078
Serial No. 10/614,188

8

PATENT

CONCLUSION

The undersigned believes that claims 1-35 are allowable over the cited prior art and respectfully requests a notice of allowance to this effect. Should the Examiner determine that any further action is necessary to place this application into better form, the Examiner is encouraged to telephone the undersigned representative at the number listed below. In addition, if any additional fees are required in connection with the filing of this response, the Commissioner is hereby authorized to charge the same to Deposit Account No. 501458.

Respectfully submitted,

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<US2000> 9196301.1